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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,511	04/12/2004	Simon C. Borst	100.2503	3058

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EXAMINER	
BALAOING, ARIEL A	
ART UNIT	PAPER NUMBER
2617	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,511	BORST ET AL.	
	Examiner	Art Unit	
	Ariel Balaoing	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/19/2006 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 7, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over LEUNG (US 2002/0167913 A1) in view of KIM et al (US 2003/0083092 A1).

Regarding claim 1, LEUNG discloses a communication system (abstract), comprising: a mobile unit (Figure 2) operative to transmit periodic channel condition indicator signals, each indicator signal including information relating to a signal to noise ratio being experienced by the mobile unit (paragraph 16, 31, 32, 40-42); and a base station operative to transmit data to the mobile unit (paragraph 32), the base station being operative to receive the indicator signals from the mobile unit and generate a

channel condition prediction reflecting a channel condition expected to be experienced by the mobile unit on an ongoing basis as conditions experienced by the mobile unit change, the channel condition prediction being based on a balanced estimate using the most recent channel condition indicator value and a mean of past channel condition indicator values, wherein the base station utilizes the channel condition prediction to dynamically manage data transmission to the mobile unit (paragraph 31, 32, 40-42, 48-61, 83-85). However, LEUNG does not expressly disclose wherein each indicator signal includes a value relating to a relating to a signal to noise ratio being experienced by the mobile unit as sensed by the mobile unit. In the same field of the endeavor, KIM discloses a mobile unit operative to transmit periodic channel condition indicator signals, each indicator signal including a value relating to a signal to noise ratio [carrier-to-interference ratio] being experienced by the mobile unit as sensed by the mobile unit (abstract; paragraph 15-17, 29). Therefore it would have obvious to a person of ordinary skill in the art at the time the invention was made to modify LEUNG to include transmitting a value relating to a signal to noise ratio experienced by the mobile as sensed by the mobile, as taught by KIM, since the use of mobile assisted measurements in determining channel quality is well known and conventional in the art.

Regarding claim 7, LEUNG discloses a base station for communicating with a plurality of mobile units, comprising: an air interface for receiving transmissions from the mobile unit, periodic ones of the transmissions including a channel condition indicator providing information relating to a signal to noise ratio being experienced by the mobile unit (paragraph 31, 32, 40-42, 48-61, 83-85); and a predictor **302, 402** for receiving

channel condition indicator values and generating future channel condition predictions on an ongoing bases reflecting a future channel condition expected to be experienced by each mobile unit, each of the future channel condition predictions being based on a balanced estimate using the most recent channel condition indicator value for the mobile unit and a mean of past channel condition indicator values for the mobile unit (paragraph 31, 32, 40-42, 48-61, 83-85); and a scheduler for making dynamic adjustments based upon said generated future channel conditions predictions to respond to changing channel conditions experiences by the mobile unit (paragraph 40-42). However, LEUNG does not expressly disclose wherein a channel condition indicator includes a value relating to a signal to noise ratio being experienced by the mobile unit as sensed by the mobile unit. KIM discloses a channel condition indicator includes a value relating to a signal to noise ratio [carrier-to-interference ratio] being experienced by the mobile unit as sensed by the mobile unit (abstract; paragraph 15-17, 29). Therefore it would have obvious to a person of ordinary skill in the art at the time the invention was made to modify LEUNG to include transmitting a value relating to a signal to noise ratio experienced by the mobile as sensed by the mobile, as taught by KIM, since the use of mobile assisted measurements in determining channel quality is well known and conventional in the art.

Regarding claim 8, LEUNG discloses an apparatus for generating a channel condition prediction and making dynamic adjustments for each of a plurality of mobile units (abstract), comprising: a data interface module for retrieving channel condition indicators, each channel condition indicator including information indicative of an actual

channel conditions experienced by the mobile units (paragraph 16, 31, 32, 40-42); and a computation module for computing a mean channel condition indicator value for each mobile unit on an ongoing basis as conditions experienced by each mobile unit change, based on a mean of past channel condition indicators associated with the mobile unit and for generating a channel condition prediction based on a balanced estimate using the most recent channel condition indicator value and said mean of channel condition indicator values (paragraph 31, 32, 40-42, 48-61, 83-85); and a scheduler for making dynamic adjustments based upon the generated channel condition prediction (paragraph 40-42). However, LEUNG does not expressly disclose wherein each channel condition indicator includes a value indicative of an actual channel conditions experienced by the mobile units as sensed by the mobile unit. KIM discloses a data interface module for retrieving channel condition indicators, each channel condition indicator including a value indicative of an actual channel conditions experienced by the mobile units as sensed by the mobile unit (abstract; paragraph 15-17, 29). Therefore it would have obvious to a person of ordinary skill in the art at the time the invention was made to modify LEUNG to include transmitting a value relating to a signal to noise ratio experienced by the mobile as sensed by the mobile, as taught by KIM, since the use of mobile assisted measurements in determining channel quality is well known and conventional in the art.

Regarding claim 11, LEUNG discloses a method of channel condition prediction (abstract), comprising the steps of: receiving and storing on an ongoing basis a succession of channel condition indicators from each of a plurality of mobile units, each

channel condition indicator received from a mobile unit reflecting a channel condition experienced by the mobile unit (paragraph 16, 31, 32, 40-42); generating a channel condition prediction for each mobile unit, each channel condition prediction reflecting a balanced estimate using the most recent channel condition indicator value and a mean of past channel condition indicator values (paragraph 40-42, 48-61); and making dynamic adjustments based upon the channel condition predictions to respond to changing channel conditions experienced by the plurality of mobile units (paragraph 40-42). However, LEUNG does not expressly disclose wherein each channel condition indicator received from a mobile unit includes a value reflecting a channel condition experienced by the mobile unit as sensed by the mobile unit. In the same field of the endeavor, KIM discloses channel condition indicators received from a mobile unit includes a value reflecting a channel condition experienced by the mobile unit as sensed by the mobile unit (abstract; paragraph 15-17, 29). Therefore it would have obvious to a person of ordinary skill in the art at the time the invention was made to modify LEUNG to include transmitting a value relating to a signal to noise ratio experienced by the mobile as sensed by the mobile, as taught by KIM, since the use of mobile assisted measurements in determining channel quality is well known and conventional in the art.

5. Claims 2, 3, 9, 10, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over LEUNG (US 2002/0167913 A1) in view of KIM et al (US 2003/0083092 A1) and in further view of LARSSON et al (US 5,241,690).

Regarding claims 2, 9, and 12, see the rejections of the parent claim concerning the subject matter these claims are dependent upon. However, the combination of LEUNG and KIM does not expressly disclose wherein each channel condition prediction assigns a greater emphasis to the mean of past channel condition indicator values during rapidly changing channel conditions and wherein each channel condition prediction assigns a greater emphasis to the most recent channel condition indicator values during more slowly changing channel conditions. LARSSON discloses wherein each channel condition prediction assigns a greater emphasis to the mean of past channel condition indicator values during rapidly changing channel conditions and wherein each channel condition prediction assigns a greater emphasis to the most recent channel condition indicator values during more slowly changing channel conditions (column 5:line 34-column 6:line 60; Environmental quality's are taken into account to provide an emphasis to predicted channel conditions, during slowly changing channel conditions the weighting coefficient would change to provide a greater emphasis to recent readings). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of LEUNG and KIM in this way, as taught by LARSSON, as a rapid changing environment can lead to inaccurate measurement results of the total system. It is further noted that LEUNG and LARSSON provide a means for predicting channel conditions and providing transmission power control in a changing environment (LEUNG – paragraph 18, 19; LARSSON - abstract).

Regarding claims 3 and 13, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of LEUNG and KIM does not expressly disclose wherein the channel condition prediction is computed by assigning a weight to the most recent channel condition indicator value and the mean of past channel condition indicator values, the relative weights being influenced by the rate of change in the channel condition. LARSSON discloses wherein the channel condition prediction is computed by assigning a weight to the most recent channel condition indicator value and the mean of past channel condition indicator values, the relative weights being influenced by the rate of change in the channel condition (column 5:line 34-column 6:line 60).

Regarding claim 10, see the rejections of the parent claim concerning the subject matter. LEUNG further discloses wherein the computation module employs said computed mean channel condition indicator value, the most recent channel condition indicator value and additional recent channel condition indicator values to generate the channel condition prediction (paragraph 31, 32, 40-42, 48-61, 83-85).

6. Claims 4, 5, 6, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over LEUNG (US 2002/0167913 A1) in view of KIM et al (US 2003/0083092 A1) and in view of LARSSON et al (US 5,241,690), and further in view of DENT (5,894,473).

Regarding claim 4 and 14, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of LEUNG, KIM and LARSSON does not expressly disclose wherein the weights assigned to the most

recent channel condition indicator value and the mean channel condition indicator value depend on a gradient of past channel condition indicator values. DENT discloses wherein the weights assigned to the most recent channel condition indicator value and the mean channel condition indicator value depend on a gradient of past channel condition indicator values (column 8:line 60-column 9:line 29). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of LEUNG, KIM and LARSSON in this way, as taught by DENT, as establishing a weighting factor according to a linear function can be used to determine improving conditions within a cell.

Regarding claim 5, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. LEUNG further discloses wherein the mobile unit transmits a channel condition indicator to the base station at each timeslot, a timeslot being a time period during which communication takes place, as defined by a standard under which the system operates, and wherein the base station receives a channel condition indicator value during each timeslot, the base station maintaining an average of channel condition indicator values, the base station computing a channel condition prediction during each timeslot, each channel condition prediction reflecting an expected channel condition expected to prevail at the mobile unit a specified number of timeslots in the future from the most recent channel condition (paragraph 31, 32, 40-42, 48-61, 83-85).

Regarding claim 6, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. LEUNG further discloses comprising a plurality of

mobile units, each transmitting periodic channel condition indicators to the base station, wherein the base station computes periodic channel condition predictions for each mobile unit (abstract; paragraph 23, 24). However, the combination of LEUNG, KIM and LARSSON does not expressly disclose wherein the base station uses the future channel condition predictions to select a mobile unit for service and to select a codeword size for transmission to each mobile unit. DENT discloses wherein the base station uses the future channel condition predictions to select a mobile unit for service and to select a codeword size for transmission to each mobile unit (abstract; column 8:line 45-column 9:line 45).

Regarding claim 15, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. LEUNG further discloses further comprising a step of managing data transmission using the channel condition predictions (abstract; paragraph 40-42).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

LESCUYER (US 2004/0242260 A1) – Controlling radio resources allocated to a mobile terminal in a cellular system

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ariel Balaoing whose telephone number is (571) 272-

7317. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on (571) 272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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AB

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